

## PATENT ABSTRACTS OF JAPAN

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(54) OPTICAL DISK APPARATUSMETHOD FOR RECORDING OPTICAL  
DISKPROGRAM FOR METHOD FOR RECORDING OPTICAL DISKAND  
RECORDING MEDIUM WITH THE PROGRAM RECORDED

(57)Abstract:

PROBLEM TO BE SOLVED: To provide an optical disk apparatusa method for recording an optical diska program for the method for recording the optical diskand a recording medium with recorded program for the optical disk recording method for carrying sufficient extendability so as to record even a file for a still picture or the like other than a moving picture.

SOLUTION: This invention permits to access individual management information through guide information of an extension file and assigns an identification code CAT ID indicative a type of a corresponding extension file and information CAT INFO TYPE of a recording form for the management information to the guide information of the extension file.

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## CLAIMS

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### [Claim(s)]

[Claim 1] In an optical disk unit which manages a program area on an administrative table recorded on a fixed field of an optical disc and records a desired file on said program area in the case of a dynamic image file by refreshable format, said file makes a group of this file and administrative information on this file with playback equipment only for said optical disc and records on said program area and records recording position information of this administrative information on said administrative table and in the case of extension files other than a dynamic image file by refreshable format, said file with playback equipment only for said optical disc. This extension file makes individual administrative information on this extension file into a group and it records on said program area. Notice information of an extension file which has the recording position information of said individual administrative information at least is recorded on said optical disc. An optical disk unit assigning an identification code which records recording position information of notice information of said extension file on said administrative table and shows a kind of said extension file using individual administrative information corresponding to notice information of said extension file and recording form information on said administrative information.

[Claim 2] The optical disk unit according to claim 1 characterized by said identification code and a recording form of said administrative information assigning said two or more same individual administrative information to one of the notice information of said extension file.

[Claim 3]The optical disk unit according to claim 1wherein a recording position of notice information of said extension file is the inner circumference side field of a recording start position of a file of the beginning of said optical disc.

[Claim 4]The optical disk unit according to claim 1wherein a recording position of notice information of said extension file is a field following said extension file of the last recorded on said optical disc.

[Claim 5]The optical disk unit according to claim 1wherein a recording position of said administrative table is the inner circumference side field of read in area created by processing of a FAINA rise.

[Claim 6]When said file is said dynamic image fileso that information for backup on said administrative information on said dynamic image filesaid dynamic image fileand said administrative information may continue one by oneThe optical disk unit according to claim 1 recording said file and said administrative informationand recording said extension file and said administrative information so that it may become said extension file and the corresponding order of said administrative information when said file is said extension file.

[Claim 7]The optical disk unit according to claim 1 characterized by setting up said file and said administrative information so that it may record by DVD format video when said file is a dynamic image file.

[Claim 8]When said individual administrative information corresponding by additional recording of said extension file is recordedSo that said individual administrative information about a recorded extension file already may be summarizedit may record following an extension file concerning said additional recording and it may correspond to record of said summarized administrative informationThe optical disk unit according to claim 1 updating notice information of said extension fileand said management table.

[Claim 9]The optical disk unit according to claim 1 having a reproduction means which plays said extension file recorded on said optical disc based on notice information of said extension fileand said individual administrative information.

[Claim 10]Based on said administrative tableinside of an administrative

information storage field of said optical disc About all the files recorded on the 1st administrative information storage field by said optical disc. The optical disk unit according to claim 1 recording said administrative information collectively and recording said administrative information on the 2nd administrative information storage field of said administrative information storage fields collectively only about said dynamic image file recorded on said optical disc.

[Claim 11]The optical disk unit according to claim 10wherein said 1st administrative information storage field is a field corresponding to a file manager system by a computer and said 2nd administrative information storage field is a field corresponding to a file manager system of DVD format video.

[Claim 12]In a record method of an optical disc which manages a program area on an administrative table recorded on a fixed field of an optical discand records a desired file on said program arealn the case of a dynamic image file by refreshable formatsaid file makes a group this file and administrative information on this file with playback equipment only for said optical discand records on said program areaand. Record recording position information of this administrative information on said administrative tableandin the case of extension files other than a dynamic image file by refreshable formatsaid file with playback equipment only for said optical disc This extension fileMake individual administrative information on this extension file into a groupand it records on said program areaNotice information of an extension file which has the recording position information of said individual administrative information at least is recorded on said optical discAn identification code which records recording position information of notice information of said extension file on said administrative tableand shows a kind of said extension file using individual administrative information corresponding to notice information of said extension fileA record method of an optical disc assigning recording form information on said administrative information.

[Claim 13]A record method of the optical disc according to claim 12 characterized by said identification code and a recording form of said administrative information

assigning said two or more same individual administrative information to one of the notice information of said extension file.

[Claim 14]A record method of the optical disc according to claim 12 wherein a recording position of notice information of said extension file is the inner circumference side field of a recording start position of a file of the beginning of said optical disc.

[Claim 15]A record method of the optical disc according to claim 12 wherein a recording position of notice information of said extension file is a field following said extension file of the last recorded on said optical disc.

[Claim 16]A record method of the optical disc according to claim 12 wherein a recording position of said administrative table is the inner circumference side field of read in area created by processing of a FAINA rise.

[Claim 17]When said file is said dynamic image file so that information for backup on said administrative information on said dynamic image file said dynamic image file and said administrative information may continue one by one A record method of the optical disc according to claim 12 recording said file and said administrative information and recording said extension file and said administrative information so that it may become said extension file and the corresponding order of said administrative information when said file is said extension file.

[Claim 18]A record method of the optical disc according to claim 12 characterized by setting up said file and said administrative information so that it may record by DVD format video when said file is a dynamic image file.

[Claim 19]When said individual administrative information corresponding by additional recording of said extension file is recorded So that said individual administrative information about a recorded extension file already may be summarized it may record following an extension file concerning said additional recording and it may correspond to record of said summarized administrative information Notice information of said extension file a record method of the optical disc according to claim 12 updating said management table.

[Claim 20]Based on said administrative tableinside of an administrative information storage field of said optical discAbout all the files recorded on the 1st administrative information storage field by said optical disc. A record method of the optical disc according to claim 12 recording said administrative information collectively and recording said administrative information on the 2nd administrative information storage field of said administrative information storage fields collectively only about said dynamic image file recorded on said optical disc.

[Claim 21]A record method of the optical disc according to claim 20wherein said 1st administrative information storage field is a field corresponding to a file manager system by a computer and said 2nd administrative information storage field is a field corresponding to a file manager system of DVD format video.

[Claim 22]In a program of a record method of an optical disc which manages a program area on an administrative table recorded on a fixed field of an optical discand records a desired file on said program areaIn the case of a dynamic image file by refreshable formatsaid file makes a group this file and administrative information on this file with playback equipment only for said optical discand records on said program areaand. Record recording position information of this administrative information on said administrative tableandin the case of extension files other than a dynamic image file by refreshable formatsaid file with playback equipment only for said optical disc This extension fileMake individual administrative information on this extension file into a groupand it records on said program areaNotice information of an extension file which has the recording position information of said individual administrative information at least is recorded on said optical discAn identification code which records recording position information of notice information of said extension file on said administrative tableand shows a kind of said extension file using individual administrative information corresponding to notice information of said extension fileA program of a record method of an optical disc assigning recording form information on said administrative information.

[Claim 23]A program of a record method of the optical disc according to claim 23

characterized by said identification code and a recording form of said administrative information assigning said two or more same individual administrative information to one of the notice information of said extension file.

[Claim 24]Based on said administrative tableinside of an administrative information storage field of said optical discAbout all the files recorded on the 1st administrative information storage field by said optical disc. A program of a record method of the optical disc according to claim 22 recording said administrative information collectively and recording said administrative information on the 2nd administrative information storage field of said administrative information storage fields collectively only about said dynamic image file recorded on said optical disc.

[Claim 25]Said 1st administrative information storage field is a field corresponding to a file manager system by a computerA program of a record method of the optical disc according to claim 24wherein said 2nd administrative information storage field is a field corresponding to a file manager system of DVD format video.

[Claim 26]In a recording medium which recorded a program of a record method of an optical disc which manages a program area on an administrative table recorded on a fixed field of an optical discand records a desired file on said program areaIn the case of a dynamic image file by refreshable formatsaid file a record method of said optical disc with playback equipment only for said optical disc This fileMake administrative information on this file into a groupand record on said program areaand. Record recording position information of this administrative information on said administrative tableandin the case of extension files other than a dynamic image file by refreshable formatsaid file with playback equipment only for said optical disc This extension fileMake individual administrative information on this extension file into a groupand it records on said program areaNotice information of an extension file which has the recording position information of said individual administrative information at least is recorded on said optical discAn identification code which records recording

position information of notice information of said extension file on said administrative table and shows a kind of said extension file using individual administrative information corresponding to notice information of said extension file. A recording medium which recorded a program of a record method of an optical disc assigning recording form information on said administrative information.

[Claim 27] A recording medium which recorded a program of a record method of the optical disc according to claim 26 characterized by said identification code and a recording form of said administrative information assigning said two or more same individual administrative information to one of the notice information of said extension file.

[Claim 28] Based on said administrative table inside of an administrative information storage field of said optical disc. About all the files recorded on the 1st administrative information storage field by said optical disc. Record said administrative information collectively and inside of said administrative information storage field. A recording medium which recorded a program of a record method of the optical disc according to claim 26 recording said administrative information on the 2nd administrative information storage field collectively only about said dynamic image file recorded on said optical disc.

[Claim 29] Said 1st administrative information storage field is a field corresponding to a file manager system by a computer. A recording medium which recorded a program of a record method of the optical disc according to claim 28 wherein said 2nd administrative information storage field is a field corresponding to a file manager system of DVD format video.

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## DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]



[Field of the Invention] This invention is applicable to a DVD (Digital Versatile Disk) device concerning the recording medium which recorded the program of the record method of an optical disk unit and an optical disc and the record method of an optical disc and the record method of the optical disc. In this invention via the notice information of an extension file it enables it to access individual administrative information and the identification code which shows the kind of extension file corresponding to the notice information of this extension file and the recording format information of administrative information are assigned. Therefore sufficient extendibility is collateralized and it enables it to record also about files such as still pictures other than an animation.

[0002]

[Description of the Prior Art] In DVD which is a mass optical disc conventionally the optical disc which can be written in it is made as [ provide / DVD-R (DVD-Recordable) which can be written in once DVD-RW (DVD-Rewritable) which can be added and DVD-RAM (DVD-Random Access Memory) ]. DVD-R and DVD-RW are made as [ play / it / by the DVD player only for playback and computer ] among these optical discs by recording a video data in the format based on DVD format video.

[0003] Drawing 14 is a chart showing the logical format of the optical disc by this DVD format video. The optical disc by this format is divided into lead-in groove (Lead in) data zone (Data Zone) and the lead-out (Lead out) from the innermost side the innermost information storage side is a head side (drawing 14 (A)) and a desired video data etc. are recorded on a data zone.

[0004] A data zone is classified into the UDF (Universal Disk Format) field (file system area) A1 the VMG (Video Manager) field (DVD administrative information area) A2 and real-time-data recording area A3 from the lead-in groove side here. A UDF field and a VMG field are administrative information storage fields which manage the file by the video data recorded on this optical disc. A VMG field is a field corresponding to a DVD player among these UDF fields and a VMG field.

The information on TOC which is the administrative information which manages the whole video data recorded on real-time-data recording area A3 is recorded. On the other hand the UDF field A1 is a field corresponding to the file manager system by a computer.

The administrative information which manages the whole video data recorded on real-time-data recording area A3 by the format which plans compatibility with the file system in a computer is recorded.

[0005]Real-time-data recording area A3 is a program area which records live data.

VTS (Video Title Set) (it is hereafter called a title suitably) is made into a unit and a video data is recorded (drawing 14 (B)).

Here VTS from the head side VTSI (Video Title Set Information) VTSM VOBS (Video Object Set for the VTSM) It is constituted by VTSTT VOBS (Video Object Set For Titles in a VTS) and VTSI BUP (Backup of VTSI) (drawing 14 (C)). The video data based on the format of MPEG (Moving Picture Experts Group) 2 which is live data is recorded on VTSTT VOB. The title menu of a video data is recorded for the recording position information etc. which are administrative information which manages the video data based on these live data in VTSI on VTSM VOBS. VTSM VOBS is an option. VTSI BUP is backup of VTSI.

[0006]In this kind of optical disc by these When it is made as [ reproduce / when accessing by computer / it / the file for which it asks by UDF is searched and ] and accesses with a DVD player it is made as [ reproduce / it / the file for which it asks by VMG is searched and ]. VMG is made to UDF constituting by this the administrative information on the video data recorded on the optical disc corresponding to the file manager system of a computer as [ constitute / the administrative information on the video data recorded on the optical disc corresponding to the DVD player ].

[0007]As a method which writes a video data in such an optical disc it is made as [ use / an Incremental Recording method (it is hereafter called an INC method)

and a Restricted Over Write method (it is hereafter called a ROW method) ]. An INC method is a method which records a video data sequentially here. A ROW method is a method applied to the optical disc which can be overwritten. However also in a ROW method in recording data on a non-record section it records a video data sequentially. In these INC(s) method and the ROW method it is made as [ manage / by RMA (Recording Management Area) provided in the inner circumference side of a lead-in groove / the field by padding etc. which are mentioned later ].

[0008] Drawing 15 is a chart showing the record procedure by a ROW method. In a ROW method a lead-in groove UDFVMGVTSI of a head title and the record section of VTSM VOBS are secured a priori by padding (drawing 15 (A)). Padding is processing which records dummy data such as NULL and secures a field here.

[0009] Thus in [ if these fields are secured ] a ROW method If VTSTT VOBS by live data is formed (drawing 15 (B)) and record of live data is completed about one title by recording a video data one by one Then VTSTT BUP is recorded and processing of padding is performed for reservation of VTSTT of the title which continues further and the record section of VTSM VOBS (drawing 15 (B)). It returns to the head side continuously and VTSTT corresponding to record of these live data and VTSM VOBS are formed (drawing 15 (C)). In a ROW method this records one VTS on an optical disc.

[0010] In [ when recording the following title continuously ] a ROW method Following the field of padding formed by the last VTSVTSTT VOBS and VTSTT BUP are formed by record of live data and processing of padding is performed for partitioning of VTSTT of the continuing title and VTSM VOBS (drawing 15 (D)). VTSTT and VTSM VOBS are formed continuously (drawing 15 (E)) and VTS which continues by this is recorded on an optical disc (drawing 15 (F)). In a ROW method in recording a title succeeding to processing of padding etc. is performed similarly and it records VTS one by one.

[0011] On the other hand in [ optical disc / which records VTS one by one in this

way / in which it comes to form real-time-data recording area ] a ROW method A UDF field and a VMG field are formed by processing of a FAINA rise a lead-in groove and lead-out are formed further (drawing 15 (G)) and thereby compatibility with the optical disc only for playback is planned. In formation of this UDF field and a VMG field from VTSl of each title and the data of VTSM VOBs the data of UDF and VMG is generated and it performs by recording on the inner circumference side leading area which secured this data by padding.

[0012] In this kind of optical disk unit conventionally JP2002-63765A By recording the start address of VTSl corresponding to the administrative table formed in the inner circumference side of an optical disc on JP2001-148166A and JP2002-56609A according to record of a title etc. A program area is managed on this administrative table and a dynamic image file is recorded and even if it is a stage in front of a FAINA rise by this it is made as [ propose / the method of making each title accessible on the basis of this administrative table ].

[0013]

[Problem(s) to be Solved by the Invention] By the way in such an optical disc it is possible to replace with magnetic tape and to apply to a portable VCR. In this case in the conventional portable VCR when some are recordable not only about an animation but a still picture also in this kind of optical disc a thing recordable about still pictures other than an animation etc. is desired.

[0014] As a method of realizing this request about an animation record by DVD format video record administrative information on UDF and VMG and about files other than an animation. It is possible to record administrative information only on UDF and to record a still picture file and a dynamic image file on an optical disc. That is if it does in this way in the file manager system by a computer etc. it will be thought by being based on UDF that all the files recorded on the real-time-data recording area which is a program area are renewable. In a DVD player by accessing real-time-data recording area on the basis of VMG as reproduction by a DVD player is not affected at all it is thought that files other than this kind of animation are recordable.

[0015]About the administrative information on each file required in order to build UDF in this way it is possible to record on an optical disc temporarily to a FAINA rise with a still picture file.

[0016]However in this kind of optical disc it is used not only by when replacing with magnetic tape in this way and using it with a videotape recorder by having a mass storage capacity but by various devices and a system. It is possible to record files other than the file of a dynamic image file and a still picture file and it is possible to manage the file recorded using the administrative information which was adapted for each device and a system.

[0017]In this case when the format of administrative information is presupposed that a definition is given for every kind of file and it adds the recordable kind of file it will be necessary to define administrative information each time and the procedure which makes possible additional recording of such a new file will take time and effort.

[0018]When it is used without defining the format of such administrative information incidentally generating of the problem of being managed by the directory structure which this kind of file does not mean in the file manager system by UDF by processing of a FAINA rise can be considered.

[0019]This invention was made in consideration of the above point and collateralizes sufficient extendibility. It is going to propose the recording medium which recorded the program of the disposal method of an optical disk unit recordable also about files such as still pictures other than an animation and an optical disc and the disposal method of an optical disc and the disposal method of the optical disc.

[0020]

[Means for Solving the Problem] In [ in order to solve this technical problem ] an invention of claim 1 Apply to an optical disk unit and in the case of extension files other than a dynamic image file by refreshable format with playback equipment only for an optical disc This extension file Make individual administrative information on this extension file into a group and it records on a program

areaNotice information of an extension file which has the recording position information of individual administrative information at least is recorded on an optical discRecording position information of notice information of an extension file is recorded on an administrative tableand an identification code which shows a kind of extension file using individual administrative information corresponding to notice information of an extension fileand recording form information on administrative information are assigned.

[0021]In an invention of claim 12it applies to a record method of an optical discIn the case of extension files other than a dynamic image file by refreshable formatwith playback equipment only for an optical disc This extension fileMake individual administrative information on this extension file into a groupand it records on a program areaNotice information of an extension file which has the recording position information of individual administrative information at least is recorded on an optical discRecording position information of notice information of an extension file is recorded on an administrative tableand an identification code which shows a kind of extension file using individual administrative information corresponding to notice information of an extension fileand recording form information on administrative information are assigned.

[0022]In an invention of claim 22it applies to a program of a record method of an optical discIn the case of extension files other than a dynamic image file by refreshable formatwith playback equipment only for an optical disc This extension fileMake individual administrative information on this extension file into a groupand it records on a program areaNotice information of an extension file which has the recording position information of individual administrative information at least is recorded on an optical discRecording position information of notice information of an extension file is recorded on an administrative tableand an identification code which shows a kind of extension file using individual administrative information corresponding to notice information of an extension fileand recording form information on administrative information are assigned.

[0023] In an invention of claim 26 it applies to a recording medium which recorded a program of a record method of an optical disc. In the case of extension files other than a dynamic image file by refreshable format with playback equipment only for an optical disc, this extension file makes individual administrative information on this extension file into a group and it records on a program area. Notice information of an extension file which has the recording position information of individual administrative information at least is recorded on an optical disc. Recording position information of notice information of an extension file is recorded on an administrative table and an identification code which shows a kind of extension file using individual administrative information corresponding to notice information of an extension file and recording form information on administrative information are assigned.

[0024] According to composition of claim 1, apply to an optical disk unit and in the case of extension files other than a dynamic image file by refreshable format with playback equipment only for an optical disc, this extension file makes individual administrative information on this extension file into a group and it records on a program area. Notice information of an extension file which has the recording position information of individual administrative information at least is recorded on an optical disc. An identification code which records recording position information of notice information of an extension file on an administrative table and shows a kind of extension file using individual administrative information corresponding to notice information of an extension file. By assigning recording form information on administrative information, extension files other than a dynamic image file by DVD format video are recorded, for example on an optical disc by DVD format video. By notice information of an extension file, a kind of extension file and a recording form of individual administrative information on this extension file can be grasped. In adding and recording a new file without changing in any way about a recording form of individual administrative information, thereby, for example, only an identification code which shows a kind of extension file can be changed and can respond. Sufficient extendibility can be

collateralized by this and it can record also about file such as still pictures other than an animation.

[0025] According to composition of claim 12, claim 22 and claim 26, sufficient extendibility is collateralized by this. A recording medium which recorded a program of a disposal method of an optical disc recordable also about file such as still pictures other than an animation and a disposal method of an optical disc and a disposal method of an optical disc can be provided.

[0026]

[Embodiment of the Invention] Hereafter an embodiment of the invention is explained in full detail referring to drawings suitably.

[0027] (1) The line block diagram 2 of a 1st embodiment [ 1st ] of an embodiment (1-1) is a block diagram showing the optical disk unit concerning a 1st embodiment of this invention. This optical disk unit 1 is made as [ record / on the optical disc 2 which is a portable VCR and is DVD / an image pick-up result ].

[0028] That is in this optical disk unit 1 the video input section 3 carries out analog-to-digital-conversion processing of the video signal which is an image pick-up result obtained from the imaging means which is not illustrated and the video signal inputted from an external instrument and outputs a video data. In [ the imaging means of this built-in is made here as / output / by control with the microcomputer 4 / the image pick-up result by an animation and the image pick-up result by a still picture / and ] this video input section 3 by this it is made as [ output / the video data based on an animation and a still picture / selectively ] following control of an imaging means with the microcomputer 4.

[0029] The audio input part 5 carries out analog-to-digital-conversion processing of the audio signal acquired with a microphone and the audio signal by an external input and outputs audio information.

[0030] By control of the microcomputer 4, compression / elongation processing part 6 switches operation and processes the data with which record reproduction is presented. Namely the video data into which compression / elongation processing part 6 is inputted from the video input section 3 and the audio input part 5. At the



time of record of audio information using the random access memory (RAM) 9 the data compression of these video data and the audio information is carried out. Multiplexing processing is carried out and it outputs to the header information treating part 7. After dividing into a video data and audio information the data obtained from the header information treating part 7 contrary to this using the random access memory 9 in a similar manner at the time of reproduction data decompression is carried out respectively and it outputs.

[0031] That is, in compression / elongation processing part 6 at the time of record the video processing section 8 carries out the data compression of the video data outputted from the video input section 3 and outputs it by control of the microcomputer 4. As opposed to this video data carrying out a data compression by the format of MPEG 2 at this time in the case of the video data based on an animation. In the case of the video data based on a still picture this video data carries out a data compression by the format of JPEG (Joint Photographic Coding Experts Group). At the time of reproduction corresponding to the data compression format of this video data the video processing section 8 carries out data decompression of the video data outputted from the multiplex processing section 10 and outputs it.

[0032] At the time of record the audio processing part 11 carries out the data compression of the audio information outputted from the audio input part 5 by the format of MPEG the Dolby audio or linear PCM and outputs it. Contrary to this at the time of reproduction data decompression of the audio information obtained from the multiplex processing section 10 is carried out and it is outputted.

[0033] At the time of record the multiplex processing section 10 carries out time multiplexing of the video data outputted from the video processing section 8 and the audio information outputted from the audio processing part 11 and outputs it to the header information treating part 7. Contrary to this at the time of reproduction a video data and audio information are separated from the time multiplexing data outputted from the header information treating part 7 and it outputs to the video processing section 8 and the audio processing part

11 respectively.

[0034] The video data into which the monitor section 12 is inputted from the video input section 3, the audio information inputted from the audio input part 5, or it is constituted by the display mechanism and speech processing mechanism which monitor the video data outputted from compression / elongation processing part 6 and audio information and thereby is made as [ monitor / an image pick-up result is monitored and / a reproduction result ] with this optical disk unit 1.

[0035] Video / audio encoder 13 carries out the data compression of the video data and audio information which are outputted from the video data inputted from the audio input part 5 and audio information or the compression / elongation processing part 6 by predetermined format and outputs them to an external instrument. Thereby with this optical disk unit 1 it is made as [ monitor / with an external instrument / an image pick-up result and a reproduction result ].

[0036] At the time of record, the header information treating part 7 receives the time multiplexing data outputted from compression / elongation processing part 6 and adds and outputs header information peculiar to DVD, the header information of an extension file mentioned later, etc. by control of the microcomputer 4. Using the information from the microcomputer 4, the data of UDF, VM, GVT, S, etc. is generated and it outputs to the DVD signal processing part 14. In the time of reproduction, etc., the header information added at the time of record is separated from the output data of the DVD signal processing part 14 and it outputs to compression / elongation processing part 6. This separated header information is notified to the microcomputer 4. An extension file is a file which is not defined by the DVD format video which is a format standardized about this optical disc 2, here and it is made as [ apply / to this extension file / the file of a still picture ] in this embodiment.

[0037] At the time of record, using the random access memory 15, the DVD signal processing part 14 generates an error correction code and adds this error correction code to this output data from the output data of the header information treating part 7. Processing of scramble processing 8/16 abnormal condition, etc.

is performed and the data row by the processing result is outputted to the analog-front-end part 16 by a serial data stream.

[0038] On the other hand, the time of reproduction -- the DVD signal processing part 14 -- the time of record -- reverse -- the output data of the analog-front-end part 16 -- decoding processing and descrambling processing -- error correction processing is carried out and a processing result is outputted to the header information treating part 7. The DVD signal processing part 14 does digital-to-analog-conversion processing of the various drive information the object for spindle control outputted from the microcomputer 4, the object for tracking control for focus control and for thread control, generates these driving signals and outputs these driving signals to the motor amplifier part 18.

[0039] The analog-front-end part 16 generates and outputs a light control signal about the laser beam with which the optical disc 2 is irradiated from the optical head 19. As opposed to the analog-front-end part 16 holding the light volume of the laser beam with which the optical disc 2 is irradiated from the optical head 19 with this light control signal to the fixed light volume for playback at the time of playback, at the time of record according to the output data from the DVD signal processing part 14, the signal level of this light control signal is changed and this starts the light volume of a laser beam from the light volume at the time of reproduction intermittently to the light volume of record according to the output data from this DVD signal processing part 14.

[0040] When the analog-front-end part 16 amplifies and carries out data processing of the light-receiving result of the returned light obtained from the optical head 19, the regenerative signal with which a signal level changes corresponding to the pit sequence formed in the optical disc 2 is generated and the regenerative data which is a binary identification result of this regenerative signal is outputted to the DVD signal processing part 14 by signal processing of this regenerative signal. This data processing generates a tracking error signal, a focus error signal, etc. with which a signal level changes according to the amount of tracking errors and a focus error amount and these signals are outputted to the

microcomputer 4 with a digital signal.

[0041]The motor amplifier part 18 drives a mechanism corresponding respectively with the various driving signals outputted from the DVD signal processing part 14. That is the motor amplifier part 18 rotates the spindle motor 20 and the thread motor 21 among these driving signals with the driving signal for spindle control and the driving signal for thread control. The actuator of loading in the optical head 19 is driven with the driving signal for tracking control and the driving signal for focus control.

[0042]The spindle motor 20 carries out chucking of the optical disc 2 and rotates it with predetermined revolving speed. The optical disc 2 makes the optical head 19 the thread motor 21 move radially.

[0043]The optical head 19 emits a laser beam from a built-in semiconductor laser with the light control signal outputted from the analog-front-end part 16 and condenses this laser beam to the information storage side of the optical disc 2 via an object lens. The returned light obtained from the optical disc 2 by the exposure of this laser beam is led to a predetermined photo detector via this object lens and the light-receiving result of this photo detector is outputted to the analog-front-end part 16. do the optical head 19 so that this object lens moves with the actuator driven with the driving signal for tracking control and the driving signal for focus control -- thereby -- tracking control -- it is made as [ carry out / focus control ]. It is made as [ record / the light volume of a laser beam is intermittently risen by a light control signal carries out the rise in heat of the information storage side of the optical disc 2 locally by this and / light volume / desired data ].

[0044]The microcomputer 4 is a computer which controls operation of this optical disk unit 1 whole. Operation of each part is controlled by the various signals etc. which are further detected in the analog-front-end part 16 by a user's operation obtained via the final controlling element which is not illustrated by executing the processing program installed in this optical disk unit 1 a priori. With namely the tracking error signal and focus error signal by which the microcomputer 4 is

detected in the analog-front-end part 16. The object for tracking control and the drive information for focus control are generated and it changes into an analog signal in the DVD signal processing part 14 and outputs to the motor amplifier part 18 and this performs processing of tracking control and focus control. The header information etc. which are detected by the header information treating part 7 detect a laser-beam-irradiation position from this detection result the drive information for thread control is generated it outputs to the DVD signal processing part 14 and this performs processing of seeking etc. Processing of spindle control is performed similarly.

[0045] Procedure shown in drawing 3 by starting of a power supply on the assumption that the processing about these optical discs 2 is performed. That is the microcomputer 4 will judge the existence of the optical disc 2 from the detection result by the detecting mechanism of the optical disc 2 which moves to step SP2 from step SP1 and is not illustrated if a power supply is started. If a negative result is obtained here the microcomputer 4 will repeat step SP2. On the other hand if it is loaded with the optical disc 2 after starting a power supply further when a power supply is started in the state where it was loaded with the optical disc 2 it will move to step SP3 from step SP2 by obtaining an affirmation result by step SP2. In a repetition of this step SP2 if a power supply is brought down the microcomputer 4 will move to step SP4 directly and will end this procedure.

[0046] In step SP3 the microcomputer 4 by driving the thread motor 21 moving the optical head 19 to the most inner circumference of the optical disc 2 and acquiring the playback result by the side of this most inner circumference from the DVD signal processing part 14 The data of VMG is acquired about the optical disc 2 by which FAINA rise processing is carried out. On the other hand when FAINA rise processing of the optical disc 2 is not yet carried out the information on RMA is acquired. Using the information on this RMA when it is judged that data is already recorded on the real-time-data recording area of the optical disc 2 the optical disc 2 is searched and VTSI of each VTS and the data of VTSTT VOBS are acquired.

Thereby the microcomputer 4 is made as [ acquire / the administrative information on the optical disc 2 required for the record reproduction of the optical disc 2 ] like the optical disk unit which carries out record reproduction of the usual DVD. [0047] In addition to the data of VMG in this processing the microcomputer 4 also acquires the data of UDF collectively. In reproduction of real-time-data recording area when the middle management information mentioned later is recorded this middle management information is also acquired collectively. Thereby the microcomputer 4 is made as [ acquire / about the administrative information on this extension file / collectively ] also about the extension file which is not defined by DVD-format video more nearly refreshable than the optical disc 2. The microcomputer 4 is recorded on the memory of built-in of a series of administrative information which was carried out in this way and acquired and is held.

[0048] Then if it moves to step SP5 it judges whether discharge of the optical disc 2 was directed and an affirmation result is obtained [ microcomputer / 4 ] hereafter pointing to the loading mechanism which does not illustrate discharge of the optical disc 2 it returns to step SP2.

[0049] On the other hand if directions other than discharge of the optical disc 2 are obtained from a user it moves to step SP6 from step SP5 and operation of directing operation (REC showing) and reproduction operation by this user instructs record to be operation of (PB's showing) and a power supply standing and directing lowering judges [ (Power OFF shows) and ]. In operation in which operation by a user directs playback here the microcomputer 4 moves to step SP7 from step SP6 performs the regeneration procedure which plays the file recorded on the optical disc 2 and returns to step SP5.

[0050] On the other hand in operation in which operation by a user directs record the microcomputer 4 moves to step SP8 from step SP6 performs the recording processing procedure which records an animation or a still picture on the optical disc 2 and returns to step SP5. By processing the optical disc 2 so that the optical disc 2 cannot record data what is called when FAINA rise processing is

carried out and UDF and VMG are formed the microcomputer 4 skips a recording processing procedure and returns to step SP5. When it is DVD-RW which can eliminate the optical disc 2 even when FAINA rise processing is carried out in this way recorded data is eliminated by a user's check and a recording processing procedure is performed.

[0051] On the other hand in operation in which operation by a user brings down a power supply the microcomputer 4 moves to step SP9 from step SP6 performs processing of power supply \*\*\*\* lowering moves to step SP4 and ends this procedure.

[0052] In the recording processing procedure of the procedure performed by doing in this way the microcomputer 4 records the file of an animation and a still picture with an INC method when the optical disc 2 is DVD-R. On the other hand when the optical discs 2 are DVD-RW and DVD-RAM the file of an animation and a still picture is recorded with a ROW method.

[0053] Drawing 4 is a chart which takes for an example the case of what is called a virgin disk that is not recording the file at all and with which explanation of the recording processing of a dynamic image file and a still picture file is presented with a ROW method. By updating the information on RMA which was acquired from the optical disc 2 and held in the memory the microcomputer 4 performs processing of padding and secures the field of UDF and VMG. When record of a dynamic image file is directed by the user VTSL of the continuing title and the field of VTSM VOBS are secured by processing of padding (drawing 4 (A)). The data of RMA held in the memory is updated by these processings.

[0054] If the start of record is directed by the user after recording the live data based on the data of a dynamic image file one by one and generating VTSTT VOBS The address information of a recording start position a file size a recording date etc. generate administrative information this administrative information is recorded and VTSL BUP is generated. For record of the continuing title the field of VTSL and VTSM VOBS is secured by padding (drawing 4 (B)). From the position which returned from the recording start position of VTSTT VOBS by the

predetermined region administrative information is recorded one by one in these forms VTSI and VTSM VOBS and this completes record of one title (drawing 4 (C)). In these processing the microcomputer 4 records the administrative information on this title on a memory and holds it.

[0055] When this continues and it records an animation the microcomputer 4 controls operation of each part similarly and is made by these in record of a dynamic image file as [ record / with the same ROW method as usual / a sequential file ].

[0056] In these processing the microcomputer 4 updates suitably the data of RMA held in the memory and rewrites RMA of the optical disc 2 with the data of RMA which the power supply brought down and was held in this memory in the time etc. at the time of discharge of the optical disc 2. Thereby in the optical disk unit 1 after record of a memory is lost it is made as [ access / on the basis of record of this RMA / the optical disc 2 in front of a FAIR rise ].

[0057] This microcomputer 4 performs these processings here by updating suitably renewal of the administrative table held in the memory. In drawing 4 numerals TV shows this administrative table.

[0058] This administrative table TV is a table which manages the program area of the optical disc 2 here it is made as [ record / the start address of VTS recorded on the program area and the address of an end ] and is made as [ assign / the field which is not accessed ] in the optical disk unit (DVD player) only for reproduction.

[0059] In [ the microcomputer 4 records by this the start address corresponding to this administrative table TV held in the memory and the address of an end by record of VTS to the optical disc 2 and ] idle time Furthermore in the time of discharge of the optical disc 2 etc. it is made as [ update / with administrative table TV held in this memory / administrative table TV of the optical disc 2 ].

[0060] On the other hand when a user points to record of a still picture the microcomputer 4 sets the recording start position of live data as the head position of the field secured by padding. The microcomputer 4 records the file (the



numerals EF show drawing 4) of the still picture which is an extension file one by one with directions of the recording start by a user (drawing 4 (D)). The middle management information which is administrative information which manages a still picture temporarily to a FAIRISE is created one by one and it holds in a built-in memory so that it may correspond to record of this still picture file EF. [0061] If only the number of files for which it furthermore asks records a still picture file and the end of record of a still picture file is directed by the user it changes into the format of record of the middle management information held in the memory to the optical disc 2 and this middle management information is recorded and the field of VTST and VTSM VOBS is secured by padding for record of the continuing title (drawing 4 (D)). Thereby the microcomputer 4 is made as [ create / collectively / administrative information ] about the extension file recorded continuously. To being an order of administrative information a dynamic image file and administrative information making administrative information and a corresponding file into a group and recording them about a dynamic image file about an extension file. According to the attribute of a file it is made as [ switch / a recording format ] by collecting by a multi-file further and recording the information for middle management by recording in order of an extension file and the information for middle management.

[0062] When [ to write ] the microcomputer 4 records a dynamic image file continuously in carrying out. Following the field secured by padding with live data VTST VOBS After recording VTSIBUP the field which continues by padding is secured and it is made as [ record / return to the head side record VTST and VTSM VOBS and / one title ] (drawing 4 (E) - (G)). In recording a still picture file after returning to the head of padding recording one by one in a similar manner and recording administrative data it is made as [ secure / by padding / a field ]. By directions of the FAIRISE by a user it is made as [ create / using such administrative information / UDF VMGA lead-in groove and lead-out ] (drawing 4 (H)).

[0063] The microcomputer 4 updates administrative table TV as it mentioned

above by these dynamic image files corresponding to record of a title. On the other hand about an extension file whenever it records information DK for middle management on the optical disc 2 the notice information of an extension file is created and notice information TE of the extension file recorded on the field which the inner circumference side of the optical disc 2 fixed by the notice information of this extension file is updated. The field fixed here is a meaning by which notice information TE of this extension file is recorded on a fixed part and the field of a crevice where UDF and VMG are not assigned is assigned in this embodiment among the fields first secured by padding. Furthermore the start address of notice information TE of this extension file and the address of an end are recorded on management table TV.

[0064] In these processes in practice the microcomputer 4 is performed inside a memory and performed about the writing to the optical disc 2 and updating at idle time etc. at the time of power supply \*\*\*\*\* lowering at the time of discharge of the optical disc 2. In record to management table TV of the start address of notice information TE of an extension file it performs by being recorded on the field which notice information TE of the extension file fixed once at the time of record of the first information DK for middle management.

[0065] With the optical disk unit 1 by this by record of management table TV. Even if notice information TE of this extension file is detected it is made as [ search / from notice information TE of this extension file / each extension file ] and it does not scan all the information storage sides of the optical disc 2 it is made as [ search / the extension file for which it asks / at high speed ]. As record of management table TV which is an object for dynamic image files can detect notice information TE of this extension file it is made as [ aim at / effective use of an information storage side ].

[0066] Information DK for middle management is administrative information required for playback of an extension file and is constituted by the attribution information by the extension which shows the attribute of an extension file the address information which shows a recording position the information on a file

size the hour entry recorded on the optical disc 2 etc. here. As shown in drawing 5 information DK for middle management is summarized by the still picture files EF1-EF3 recorded continuously and management information CI is recorded on a head. Management information CI is made as [ record / identification information on a directory etc. which show the category of the file managed by the continuing individual information EXF1-EXF3 ] and is made as [ maintain / by this / the file manager system and compatibility in a computer ] here.

[0067] On the other hand the individual information EX is individual administrative information on an extension file and is formed by the file name of a corresponding file the address of a recording start position etc. Notice information TE of an extension file is the notice information of the extension file which has the recording position information of individual administrative information and is made as [ record / the address by the pointer in which the recording start position of management information CI which is a recording start position of an identification code and information DK for middle management is shown etc. ].

[0068] This records the start address of a title and the address of an end on management table TV as the microcomputer 4 corresponds to record of this title (VTS\*\*1) as mentioned above if the title (VTS\*\*1) by a dynamic image file is recorded as shown in drawing 5 (A). If the still picture files EF1-EF3 of three sheets are recorded by JPEG in this state management information CI and the individual information EXF1-EXF3 concerning these still picture files EF1-EF3 will be recorded and information DK for middle management will be recorded. Management table TV is updated so that notice information TE of an extension file may be recorded and it may correspond to this record. About these processes the microcomputer 4 is performed by corresponding renewal of information etc. which were held in the memory and actually breaks record of the optical disc 2 in the time of discharge of the optical disc 2 etc. Incidentally it is the same as that of below.

[0069] If deletion of still picture file EF2 recorded on the 2nd in this state is

directed as shown in drawing 5 (B) notice information TE of an extension file will be detected from record of management table TV and the recording position of corresponding information DK for middle management will be detected from this notice information TE. The microcomputer 4 by detection of this recording position by actual deletion of individual information EXF2. Or the record section of this still picture file EF2 is set as a non-record section by change of individual information EXF2 recording still picture file EF2 on the optical disc 2 by setting the flag which shows that individual information EXF2 is the information which is meaningless in any way as individual information EXF2 etc. The microcomputer 4 updates whole information DK for middle management by overwrite in renewal of this information DK for middle management in this case.

[0070] On the other hand when record of a still picture file is directed continuously and the record section of previously eliminated still picture file EF2 is a leading area of a non-record section the microcomputer 4 as shown in drawing 5 (C) notice information TE of an extension file is detected from record of management table TV in a similar manner. From this notice information TE the recording position of corresponding information DK for middle management is detected and the address of the field set as the non-record section from record of individual information EXF2 of this information DK for middle management is detected further. The microcomputer 4 overwrites management information CI [ which records still picture file EF22 concerning directions on this field by this and starts still picture file EF1EF22 and EF3 ] and individual information EXF1EXF22 and EXF3 and breaks record of information DK for middle management. When deletion of this still picture file EF22 is furthermore directed the record section of still picture file EF22 is similarly set to having explained drawing 5 (B) in a non-record section.

[0071] Thus in recording information DK for middle management the microcomputer 4 as shown in drawing 6 when information DK for middle management is anew recorded by the additional recording of an extension file information DK for middle management about the extension file already

recorded on the optical disc 2 till then is summarized information DK1 for middle management is generated and this information DK1 for middle management is recorded on the optical disc 2. Notice information TE of an extension file is updated so that it may correspond to record of this information DK1 for middle management.

[0072] That is drawing 6 (A) is a case where recorded one title (VTS\*\*2) and still picture file EF4EF5 and EF6 are recorded after that from the state where it mentioned above about drawing 5 (A). Still picture file EF1 which held the microcomputer 4 in the memory in this case EF2 and information DK for middle management of EF3 From the information on the recording position of these still picture file EF4EF5 and EF6 etc. management information CI and the individual information EXF1-EXF6 concerning these still picture files EF1-EF6 are generated and it records on the optical disc 2 and notice information TE of an extension file is updated.

[0073] Thereby about still picture file EF1 recorded EF2 and EF3 the microcomputer 4 already breaks record of the optical disc 2 so that it may access by the individual information EXF1-EXF3 to which this information DK1 for middle management newly recorded corresponds. As shown in drawing 6 (B) also about renewal of the newly recorded still picture files EF4-EF6 deletion and renewal of the recorded still picture files EF1-EF3 already and deletion. It is made as [ perform / by processing of the individual information EXF1-EXF6 in which this information DK1 for middle management newly recorded corresponds ].

[0074] In [ if carrying out the FAINA rise of the optical disc 2 to write and which does in this way and records an extension file is directed by the user in carrying out ] the microcomputer 4 The data of UDF is created from the administrative information on all the titles which were carried out in this way and created on the basis of the management table (VTSIVTSTT VOBS) and the middle management information on all the extension files and it records on the optical disc 2 (drawing 4 (H)). The data of VMG is generated only from the administrative information on all the titles (VTSIVTSTT VOBS) and it records on the optical disc 2. In generation

of the data of these UDF and VMGiT creates from the middle management information etc. which were held in the memory. If the microcomputer 4 is carried out in this way and UDF and VMG are recorded it will create a lead-in groove and lead-out. Record of such UDF and VMG a lead-in groove and lead-out are performed with the output to the DVD signal processing part 14 of creation and the data in which the microcomputer 4 corresponds about record of middle management information further.

[0075] In this embodiment about UDF which is the administrative information for computers by this. About VMG which is the administrative information for DVD reproduction the information concerning an extension file is made as [ record / at all ] to recording administrative information so that it can recognize and access also about an extension file. In this processing the microcomputer 4 like files which constitute a title such as VTSI and VTS MVOBS It is made not to show it to a user by playback of the optical disc 2 in a computer about the file of temporary middle management information which is meaningless in any way and is made as [ improve / the part and user-friendliness ].

[0076] In the optical disk unit which plays the conventional DVD by these only the dynamic image file recorded on the optical disc 2 by record of VMG is played. On the other hand in this optical disk unit 1 the microcomputer 4 In step SP3 of drawing 3 the data of UDF and VMG is acquired it is made as [ control / the whole operation ] so that each file may be accessed by UDF about an extension file and it is made as [ reproduce / about an extension file / it / by this ].

[0077] Drawing 7 is a flow chart which shows the recording processing procedure mentioned above about drawing 3 and drawing 4. If this recording processing procedure is started the microcomputer 4 will move to step SP12 from step SP11 and will be judged in what requires directions of record by a user for record of an animation the thing concerning record of a still picture and the thing concerning processing of a FAIRY rise.

[0078] In the case of what requires directions of record by a user for record of an animation here the microcomputer 4 moves to step SP13 from step SP12 and it is

judged whether the start of record was directed by the user. If an affirmation result is obtained that the microcomputer 4 will repeat [ for ] step SP13 if a negative result is obtained hereit will move to step SP14 from step SP13and live data will be recorded as drawing 3 was explained. If it furthermore moves to step SP15it judges whether the stop of record was directed by the user and a negative result is obtained hereit will return to step SP14. Therebythe microcomputer 4 repeats the procedure of step SP14-SP15-SP14if live data are recorded and an affirmation result is obtained by step SP15 one by onewill end record of live data and will complete record of VTSTT VOBS.

[0079]Then the microcomputer 4 moves to step SP16it forms VTSTI BUPVTSTI and VTSM VOBS one by onerecords one VTS by thismoves to step SP17and ends this procedure.

[0080]On the other handby a userwhen directions are record of a still picturethe microcomputer 4 moves to step SP18 from step SP12and it is judged whether the start of record was directed by the user. If an affirmation result is obtained that the microcomputer 4 will repeat [ for ] step SP18 if a negative result is obtained hereit will move to step SP19 from step SP18and as drawing 3 and drawing 4 were explainedthe extension file by a still picture file will be recorded. If it furthermore moves to step SP20it judges whether the stop of record was directed by the user and a negative result is obtained hereit will return to step SP19. Therebythe microcomputer 4 repeats the procedure of step SP19-SP20-SP19if a still picture file is recorded and an affirmation result is obtained by step SP20 one by onewill end record of a still picture file and will move to step SP21. The microcomputer 4 records middle management information etc.moves to step SP17and ends this procedure here.

[0081]On the other handin record of what requires directions of record by a user for processing of a FAIRISEthe microcomputer 4 moves to step SP22 from step SP12and it is judged whether the start of record was directed by the user. When a negative result is obtained herethe microcomputer 4After performing processing of a FAIRISE as it moves to step SP23 from step SP22 and

drawing 3 and drawing 4 were explained if an affirmation result is obtained repeating [ for ] step SP22it moves to step SP17 and this procedure is ended. [0082]On the other handdrawing 8 is a flow chart which shows the regeneration procedure mentioned above about drawing 3. If this regeneration procedure is startedthe microcomputer 4 will move to step SP32 from step SP31and will be judged in what requires directions of reproduction by a user for record of an animationand the thing concerning record of a still picture.

[0083]In the case of what requires directions of reproduction by a user for reproduction of an animation herethe microcomputer 4 moves to step SP33 from step SP32and it is judged whether the reproductive start was directed by the user. If an affirmation result is obtained that the microcomputer 4 will repeat [ for ] step SP33 if a negative result is obtained hereit will move to step SP34 from step SP33. The microcomputer 4 controls the whole operation here to reproduce the file of the animation directed by the user on the basis of the administrative information which was recorded on the memory and held.

[0084]That iswhen the optical disc 2 is an optical disc by which FAINA rise processing was carried outthe recording position of a file corresponding with the data of VMG held in the memory is detectedand the playback from this recording position is directed to each part of the optical disk unit 1. On the other handwhen the optical disc 2 is an optical disc by which FAINA rise processing is not carried outThe recording position of a file corresponding by record of administrative table TV held in the memoryand VTSI of a corresponding title and record of VTSTT VOBS is detectedand the reproduction from this recording position is directed to each part of the optical disk unit 1.

[0085]Thusif it will judge whether the microcomputer 4 moved to step SP35 continuouslyand the reproductive stop was directed by the user if reproduction is directedand a negative result is obtained hereit will return to step SP34. Therebythe microcomputer 4 repeats the procedure of step SP34-SP35-SP34and reproduces the file of the animation directed by the user one by one. On the other handif an affirmation result is obtained by step SP35reproductive



operation is ended it will move to step SP36 and this procedure will be ended.

[0086] On the other hand in the case of what requires directions of reproduction by a user for reproduction of an extension file the microcomputer 4 moves to step SP37 from step SP32 and it is judged whether the reproductive start was directed by the user. If an affirmation result is obtained that the microcomputer 4 will repeat [ for ] step SP37 if a negative result is obtained here it will move to step SP38 from step SP37.

[0087] When the optical disc 2 is an optical disc by which FAINA rise processing was carried out the microcomputer 4 detects the recording position of a file corresponding with the data of UDF held in the memory and directs the playback from this recording position to each part of the optical disk unit 1 here. On the other hand when the optical disc 2 is an optical disc by which FAINA rise processing is not carried out the recording position of a file corresponding from record of the management table held in the memory record of notice information and corresponding middle management information is detected and the playback from this recording position is directed to each part of the optical disk unit 1.

[0088] Thus if it will judge whether the microcomputer 4 moved to step SP39 continuously and the reproductive stop was directed by the user if reproduction is directed and a negative result is obtained here it will return to step SP38. Thereby the microcomputer 4 repeats the procedure of step SP38-SP39-SP38 and reproduces the file of the still picture directed by the user one by one. On the other hand if an affirmation result is obtained by step SP39 reproductive operation is ended it will move to step SP36 and this procedure will be ended.

[0089] Drawing 9 is a chart showing such notice information TE of an extension file and management information CI. Notice information TE is information which manages the whole field where the extension file was recorded and is made as [ define / by the management table of RMA / as having mentioned above / a recording position ]. It is made as [ judge / it / whether if it explains in full detail here notice information TE is recorded by EX\_STATUS\_FLAG in the field of

management table TV ]and is made as [ define / a start address and size ]. A temporary information management table (TMP EXTI MAT) and a category information search pointer table (CAT INFO SRPT) are recorded continuouslyand notice information TE is formed.

[0090]Here a temporary information management table (TMP EXTI MAT)It is the table which recorded the number of tables of the continuing category information search pointer table (CAT INFO SRPT)A category information search pointer table (CAT INFO SRPT) is a table which manages an extension file for every category.

[0091]The identification code which shows that a temporary information management table (TMP EXTI MAT) is a temporary information management table at 12 bytes of the head is assigned by ISO/IEC646:1983 (a-character). The version number of TV (it is a management table) corresponding to the next 2 bytes is recordedand the next 2 bytes are assigned to reserve. The number of the category information search pointer tables (CAT INFO SRPT) following the next 1 byte is recorded. This number of tables is 1-255 here. The next 3 bytes are assigned to reserve.

[0092]Notice information TE detects a temporary information management table (TMP EXTI MAT) on the basis of management table TV by thisIt is made as [ detect / the number of the tables registered into the continuing category information search pointer table (CAT INFO SRPT) ].

[0093]A category information search pointer table (CAT INFO SRPT) is formed for every category of an extension files as shown in drawing 1. The category information search pointer table (CAT INFO SRPT) is made as [ set / as identification code CAT ID which shows the kind of extension file / 2 bytes of head ]. The information CAT INFO TYPE on a type which it is the form of management information CI corresponding to the next 2 bytesand shows the recording form of the individual information EXF is describedIt is made as [ describe / address information CAT INFO SA of the recording start position of management information CI corresponding to the next 4 bytes is describedand /

the size CAT INFO SZ of management information CI corresponding to 4 bytes which continues further ].

[0094]In the category information search pointer table (CAT INFO SRPT) which does in this way here and is definedIdentification code CAT ID which shows the kind of extension file is made as [ assign /for example / "01" / the still picture file by JPEGand the still picture file according / "02" / to GIF ].

[0095]Therebywith this optical disc 2it follows one by one from management table TVidentification code CAT ID detects the form of a fileand it is made as [ check / using the information CAT INFO TYPE on a type / the recording form of management information CI and the individual information EXF ]. Thereforein for examplethe state where only the case where identification code CAT ID is "01" and "02" is defined. In newly recording the still picture file by a bit map as an extension fileit is made as [ divert / to management information CI and the individual information EXF / the form in the still picture file by JPEG ] by only identification code CAT ID's changing description and setting up the information CAT INFO TYPE on a type identically to the still picture file by JPEG. Therebyin this embodimentit is made as [ simplify / the procedure in the case of adding the recordable kind of file ]and is made as [ secure / that part and extendibility ].

[0096]If it does in this way and the form of management information CI and the individual information EXF is divertedAlso about the file which is not defined at allprocessing of a FAIR rise can be performed by processing of the same middle management information DK as the still picture file by JPEGand extendibility can be secured also by this.

[0097]it writes -- in carrying outmanagement information CI and the individual information EXF are formed by correspondence with each category information search pointer table (CAT INFO SRPT)as shown in drawing 10. Management information CI differs in structure here using the information CAT INFO TYPE on the type of a category information search pointer table (CAT INFO SRPT)According to the category of the extension file concerning the individual information EXF which this management information CI managesit is made as

[ set / this type of information CAT INFO TYPE ].

[0098]Drawing 10 is a case where this type of information CAT INFO TYPE is "01" and is made as [ apply / the structure by this type of "01" ] in information DK for middle management of the still picture file mentioned above.

[0099] Identification code CAT INFO ID which shows here that this management information CI is the management information of an extension file at 12 bytes of the head is described by ISO/IEC646:1983 (a-character) Version number TV VERN of TMP\_VMG1 which is a management table is described by the next 2 bytes. . The next 2 bytes should be set as reserve and do to the next 8 bytes so that the directory name of the 1st hierarchy of an extension file is described by ISO/IEC646:1983 (a-character). It is made as [ describe / the 2nd hierarchy's directory name / by the next 8 bytes / similarly ].

[0100] IMP ID which is ID of implementation updated at the end to the next 8 bytes is assigned. It is made as [ assign / the time stamp MD TM which shows the update date of the last of this management information CI to the time stamp CR TM which shows the date and time of creation of this management information CI to the next 12 bytes and the next 12 bytes ]. The number of individual information EXF1 - EXFn(s) is described in 1-9999 by the next 2 bytes and it is made as [ secure / 2 bytes of the last / reserve ].

[0101] On the other hand, the individual information EXF is made as [ assign / the next 1 byte / 12 bytes of head is assigned to file name FILE NAME and / the protection information CGMS INFO of copyright ] as shown in drawing 11. It is made as [ assign / the next 3 bytes / the time stamp CR TM which the start address EXF SA of a corresponding extension file and the next 4 bytes show the file size EXF SZ to and the next 12 bytes show the date and time of creation ].

[0102] With this optical disk unit 1 on the basis of management table TV by this Notice information TE of an extension file. Do so that directory structure can inform a user of the extension file which followed management information CI and the individual information EXF one by one and was recorded on the optical disc 2. It is made as [ acquire / from these notice information TE management

information C and the individual information EXF / various kinds of information required to build the file manager system of a personal computer ].

[0103] it writes -- attaching for carrying out -- the microcomputer 4 -- the time of a FAINA rise -- such notice information TE. According to description of management information CI and the individual information EXF information including the property of each extension file a file name a file size etc. is acquired and it is made as [ create / UFD ] according to the directory structure of management information CI which manages the individual information EXF of each extension file.

[0104] (1-2) If it is loaded with an optical disc by the user in the composition beyond operation of a 1st embodiment where (drawing 2) and a power supply are started in this optical disk unit 1. If a power supply is started in the state where it was loaded with the optical disc, the optical head 19 will move to the inner circumference side of the optical disc 2 by the drive of the thread motor 21 through the DVD signal processing part 14 with the microcomputer 4 and the motor amplifier part 18. Furthermore, the optical disc 2 is irradiated with a laser beam by the optical head 19. By control of the optical head 19, which sequential operation of the light-receiving result by the optical head 19 of returned light was carried out with the analog-front-end part 16 and the microcomputer 4 and passed the DVD signal processing part 14 by processing of this microcomputer 4 and the motor amplifier part 18. Processing of tracking control and focus control is performed. The data recorded on the optical disc 2 is played by processing by the DVD signal processing part 14 of a light-receiving result. In the optical disk unit 1, the variety of information recorded on the inner circumference side of the optical disc 2 is acquired by this the processing of a series of with the microcomputer 4 and is held by it at the memory of built-in on the microcomputer 4.

[0105] In the case of the optical disc only for playback in which this optical disc 2 was created by La Stamp, in the case of the optical disc in which the optical disc 2 recorded only the dynamic image file further and which comes to carry out

FAINA rise processingby this processing of a series of. The data of VMG which is the administrative information for DVD players recorded on the inner circumference side of the optical disc 2 is acquired by the microcomputer 4. By thiswith the optical disk unit 1if playback of the optical disc 2 is directed by the useraccording to the data of this VMGby the drive of the thread motor 21 through the DVD signal processing part 14 and the motor amplifier part 18. The optical head 19 seeks to the recording position of the title for which a user asksand by the light-receiving result of the optical head 19 further tracking control and where focus control is carried outSequential operation of the light-receiving result of the optical head 19 is carried out in the DVD signal processing part 14the header information treating part 7and the compression / elongation processing part 6and the video data based on an animation is reproduced. namely-- the regenerative signal with which a signal level changes according to the pit sequence of the optical disc 2 which is a light-receiving result is processed in the analog-front-end part 16and regenerative data is generated -- this regenerative data -- the DVD signal processing part 14 -- decoding and a DEINTA reeve -- error correction processing is carried out. This regenerative data by which error correction processing was carried out is inputted into the header information treating part 7a header is removed hereand the information on this header is notified to the microcomputer 4. By the multiplex processing section 10it is continuously inputted into compression / elongation processing part 6separate into a video data and audio informationand about a video data. The data compression by MPEG is solved by the video processing section 8and it is displayed by the monitor section 12or is outputted to an external instrument from video / encoder 13. On the other handafter data decompression of the audio information is carried out in the audio processing part 11a monitor is presented with it by the monitor section 12or it is outputted to an external instrument from video / encoder 13.

[0106]On the other handwhen it is a virgin disk which can rewrite the optical disc 2the data of RMA of the optical disc 2 is acquired by access of the optical disc 2

at the time of starting of a power supply with the microcomputer 4 at the time of charge of the optical disc 2. In the optical disc unit 1 a user's selection of the photographing mode of an animation will secure the field which records further VTSI etc. of the field which forms UDF and VMG by padding and VST by renewal of RMA held in the memory in the microcomputer 4 (drawing 5).

[0107] When the start of recording is directed by the user in this state one by one from the video input section 3 and the audio input part 5 A video data Audio information is inputted processing of a data compression is performed by the video processing section 8 by MPEG about a video data and processing of a data compression is performed in the audio processing part 11 about audio information. Furthermore multiplexing processing of these video data by which the data compression was carried out and the audio information is carried out by the multiplex processing section 10 and a header is added to the data of the processing result by the header information treating part 7. After the error correcting code was added in the DVD signal processing part 14 which furthermore continues Interleave-process and coding processing is carried out and the light volume of the laser beam with which the optical disc 2 is irradiated from the optical head 19 according to the data of this processing result is started by the analog-front-end part 16 Thereby a pit sequence is formed in the optical disc 2 one by one and the video data based on an animation is recorded on it one by one.

[0108] In the optical disc unit 1 if stop instruction of the record is done by the user stop control of a series of processings in compression / elongation processing part 6 grade is carried out with the microcomputer 4 record of a video data is stopped and the administrative information on the file by the animation which was carried out in this way and recorded will be continuously recorded on an optical disc. Namely so that it does in this way and administrative information may be generated by the microcomputer 4 and it may record in the optical disc unit 1 following a video data from the information including position information the information on a file size a recording date etc. which records an animation This

administrative information is outputted to the DVD signal processing part 14 it is recorded on the optical disc 2 and the field of VTSM BUP is formed by this and continuously by padding. In [ the optical head 19 seeks to the field of VTSM and VTSM VOBS which the field which generates VTSM of continuing VTSM and VTSM VOBS was secured and were secured previously and ] this field The same administrative information is outputted to the DVD signal processing part 14 it is recorded on the optical disc 2 and thereby the field of VTSM and VTSM VOBS is formed.

[0109] Thereby in the optical disk unit 1 the video data of 1 title based on an animation is recorded. When the file by an animation is recorded with the optical disk unit 1 by these Administrative information and a file are recorded by the DVD format video which is a format which the administrative information by the administrative information by VTSM the administrative information by VTSM VOBS a file and VTSM BUP follows. In the optical disk unit 1 when record of an animation is continuously directed by the user a title is recorded one by one on the optical disc 2 by repetition of the same processing.

[0110] If it does in this way and an animation is recorded 1 title as for the inner circumference side of the optical disc 2 the address which shows the head recording position of a title and the recording position of an end in a management table will be recorded.

[0111] Thus if it is when loaded with the optical disc which records a title one by one and which has not yet carried out a FAINA rise At the beginning this administrative table is acquired and the administrative information which used the title and the group in this way and was recorded by the scan of the optical disc 2 on the basis of this administrative table is acquired one by one and is held at the memory of the microcomputer 4. The dynamic image file which starts directions of a rebirth of a user on the basis of the administrative information acquired still in this way is reproduced.

[0112] If it does in this way a title is recorded in the optical disk unit 1 and processing of a FAINA rise is directed by the user The data of UDF and VMG is



generated by the administrative information which forms the title recorded on a memory based on record and group of an administrative table and it is recorded on the inner circumference side field to which these were secured to the optical disc 2 and a lead-in groove and lead-out are formed. If it is in this optical disc by this it is set up refreshable with the DVD player only corresponding to the usual DVD format.

[0113] On the other hand when the recording mode of a still picture is chosen by the user in a virgin disk the field of UDF and VMG is secured by padding like the case of an animation. In an optical disk unit the operational mode of an imaging means is switched to the mode of a still picture and the operational mode in compression / elongation processing part 6 is switched to the operational mode of the data compression by JPEG.

[0114] If the recording start of a still picture is directed by the user in this state the data compression of the video data based on the still picture inputted from the video input section 3 will be carried out by the format of JPEG by the video processing section 8 of compression / elongation processing part 6. Thereby with the optical disk unit 1 it replaces with the video data based on an animation the data with which record is presented by the video data based on a still picture is generated and it is recorded on the optical disc 2 one by one like the case where this data is based on an animation.

[0115] On the optical disk unit 1 and in record of an animation To securing the field of introduction VTSI and VTSM VOBS and recording live data in record of this still picture it returns to the head of the field secured by padding and the live data based on a still picture are recorded without securing such a field. Directions of record of the still picture which continues by a user will record the continuing still picture on the optical disc 2 similarly. The recording position of each file etc. are recorded on a memory for these the records of every.

[0116] If only the number of files which is carried out in this way and for which it asks in the optical disk unit 1 records the file by a still picture on an optical disc and the record stop of a still picture is directed by the change of the operational

mode by a user etc. The administrative information by the recording position etc. which were held in the memory is recorded on the continuing field as temporary middle management information to a FAINA rise by these multi-files. Thereby with the optical disk unit 1 when recording files other than an animation the recording format of a file and administrative information is switched by the attribute of a file which a file and administrative information are recorded and is recorded so that it may become the order of administrative information which files and corresponds. [0117] Thereby with the optical disk unit 1 it is recordable on the optical disc 2 also about file such as a still picture which is not defined by DVD format video. When the optical disk unit which supports only the usual DVD format video is loaded with the optical disc 2 which was carried out in this way and recorded When the administrative information recorded according to DVD format video such as VTS by the search at the time of charge etc. is detected and VTS is reproduced by this administrative information Thus it can avoid affecting reproduction of an animation at all about file such as a recorded still picture and corresponding administrative information. In the optical disc which was carried out in this way and recorded by this it becomes possible to play the file of an animation with the usual DVD player.

[0118] In the optical disk unit 1 such information DK for middle management (Drawing 5) After management information CI which is summarized by the multi-file recorded continuously and manages the whole was recorded The head position of each file and the individual information EXF which shows a file name are recorded and formed and as for the inner circumference side of the optical disc 2 the start address of this information DK for middle management is recorded on the fixed field as notice information TE of an extension file. Furthermore the recording position information of notice information TE of this extension file is recorded on administrative table TV.

[0119] According to the optical disk unit which also supports files other than such an animation by this it becomes possible to reproduce also about the file of a still picture. Namely when loaded with such an optical disc 2 in the optical disk unit 1.

The search of the optical disc 2 on the basis of an administrative table is reproduced from the optical disc 2 also about information DK for middle management of not only the data of VTS and VTSM VOBS but a still picture file and it is held at the memory of the microcomputer 4.

[0120] A user can be provided with the title etc. of the animation and still picture which were recorded on the optical disc 2 by a user's directions by this. The dynamic image file which corresponds similarly with directions of playback by a user with having mentioned above about the optical disc only for playback with the data of VTS and VTSM VOBS when a user points to playback of an animation is played.

[0121] On the other hand when reproduction of a still picture file is directed by the user the recording position etc. of a file corresponding from information DK for middle management held in the memory are detected the data recorded one by one on the optical disc 2 by this detection result is played and it is processed by the same course as the regenerative data based on an animation. In the optical disk unit 1 in processing of this regenerative data in processing the regenerative data based on a still picture so that data decompression of the video data which carried out the data compression by JPEG may be carried out. Processing of the video processing section 8 is switched with the microcomputer 4 and checks the video data based on a still picture by the monitor section 12 by this and it becomes possible to output to an external instrument from video / audio encoder 13 further.

[0122] If it is in the file by such a still picture etc. generally as compared with the file by an animation to a thing with a small file size the middle management information which is such administrative information collects by a multi-file is created and is recorded with the optical disk unit 1 (drawing 5). Thereby with the optical disk unit 1 reduction of the record section by record of an administrative file can be reduced in recording the extension file by such a still picture file etc.

[0123] When collecting by a multi-file in this way and recording it is made as [ record / for every kind of file which is the attribute of a file / collectively ] and is

made as [ simplify / by this / search processingthe processing in the FAINA rise mentioned lateretc. ].

[0124]in particularin such information DK for middle managementrecord of many files is predicted to a recording position boiling many things and changing with records of various files. Although it can respond by record of an administrative table to change of such a recording positionwhen it corresponds to each extension file like the case of a dynamic image file only on an administrative tableit becomes impossible to correspond to record of many files. Howevernotice information TE of an extension file is managed by this administrative table in this embodimentBy managing management information CI which manages collectively the extension file continuously recorded by notice information TE of this extension fileit can respond to record with change of such a recording positionand many files simultaneously.

[0125]By recording the position information on information DK for middle management on such an administrative tableby accessing the optical disc 2 on the basis of this position informationit is simple and high-speed and an extension file can be accessed. By using administrative table TV for dynamic image files in this wayconsumption of the information storage side by creating this kind of table separately can be preventedand that minute information recording surface can be used effectively only for an extension file.

[0126]In the optical disk unit 1when newly recording information DK for middle management in doing in this waymaking an extension file into a group and recording it with information DK1 for middle managementit is collected and recorded also about information DK for middle management already recorded on the optical disc 2 (drawing 6). Renewal of an extension file and processing of deletion are performed by renewal of information DK1 for middle management summarized at the end in this way. Therebywith the optical disk unit 1even when many extension files are recorded discretelya corresponding extension file can be accessed by acquisition of one information DK for middle managementand the optical disc 2 can be accessed at high speed also by this.

[0127]As opposed to the optical disc by which records only what is called a virgin disk and an animation by these records the file of an optical disc an animation and a still picture by which a FAINA rise is not yet carried out in the optical disc unit 1 and a FAINA rise is not yet carried out The file of an animation and a still picture is recorded one by one by a user's operation.

[0128]On the other hand about the optical disc which does in this way and records an animation and a still picture if a FAINA rise is directed by the user Using the administrative information and middle management information which were created by record of the administrative information which was acquired from the optical disc based on the management table and was held in the memory middle management information an animation and a still picture and were held in the memory. The data of UDF for computers is created and this data is recorded on the field secured to the optical disc 2 a priori. The VMG data for DVD players is generated only from the administrative information on a dynamic image file and it is similarly recorded on the optical disc 2.

[0129]With the optical disc unit 1 by this The inside of the administrative information storage field of the optical disc 2 About all the files recorded on the UDF field which is the 1st administrative information storage field by the optical disc 2. The administrative information by a group is collectively recorded on the VMG field for DVD which is the 2nd administrative information storage field to being collectively recorded by the administrative information by a group only about the dynamic image file which is a file of the specific attribute recorded on the optical disc.

[0130]By playing the file recorded on the optical disc 2 on the basis of the VMG field which is an object for DVD when playing the optical disc by which the FAINA rise was carried out by this in this way from a DVD player About record of file such as a still picture the animation by DVD format video can be reproduced certainly without affecting reproduction of an animation in any way.

[0131]In playing the optical disc by which the FAINA rise was carried out in this way by computer UDF is the file management format corresponding to the file

manager system of a computer and the file of an animation becomes possible [ reproducing and using also about files such as a still picture] from the first by reproducing each file by UDF in a computer.

[0132] Thus in the optical disk unit 1 which can record a still picture file in addition to a dynamic image file the individual information EXF which is individual administrative information on an extension file is summarized by management information C and the start address of this management information CI is recorded on notice information TE of an extension file. In the optical disk unit 1 identification code CAT ID which shows the kind of extension file which management information CI manages collectively to this notice information TE is recorded and the recording form information CAT INFO TYPE on the individual information EXF that it corresponds is recorded apart from this.

[0133] Except for the still picture file according [ in / by this / a user ] to JPEG for example when it is going to record the file by GIF a bit map etc. on this optical disc 2 about the individual administrative information EXF and recording form CAT INFO TYPE. It can set up identically to the case of a still picture only identification code CAT ID which shows the kind of extension file can be changed and such various kinds of files can be recorded. Also with the file which was carried out in this way and recorded UDF can be created by a FAT file system and suppose that it is accessible by computer. Thereby in this embodiment sufficient extendibility is collateralized and it becomes possible to record also about files other than an animation.

[0134] According to the composition beyond the effect of a 1st embodiment (1-3) Via the notice information of an extension file By assigning the identification code which enables it to access individual administrative information and shows the kind of extension file corresponding to the notice information of this extension file and the recording form information on administrative information Sufficient extendibility can be collateralized and it can record also about files such as still pictures other than an animation.

[0135] The recording position of the notice information of the extension file which

pinpoints the recording position of the administrative information on such an extension file by setting it as the inner circumference side field of the recording start position of the file of the beginning of an optical disc. It is recordable on the fixed field and by this the notice information of this extension file can be accessed. The recording position of administrative information can also be pinpointed regardless of an administrative table and an information storage side is used effectively and it enables it to search about this notice information at high speed.

[0136] By recording the administrative information about a recorded extension file already collectively and updating the notice information of an extension file so that it may correspond to this record when recording administrative information corresponding by the additional recording of an extension file. A recording position can be pinpointed about all the extension files recorded on the optical disc by playback of one administrative information and frequent access of the part and the optical disc 2 can be prevented.

[0137] It can play and use also about files other than an animation by playing the file of each attribute recorded on the optical disc based on administrative information other than the animation which was carried out in this way and recorded.

[0138] About all the files recorded on the 1st administrative information storage field by the optical disc. By recording the administrative information by a group collectively and recording the administrative information by a group on the 2nd administrative information storage field collectively only about the file of a specific attribute. It enables it to reproduce an animation depending on the usual DVD player and all the files such as an animation and a still picture can be made refreshable depending on a computer.

[0139] (2) The 2nd embodiment drawing 12 and drawing 13 are a chart with which explanation of the record method of drawing 5 and the middle management information by contrast with drawing 6 is presented. In the optical disk unit concerning this embodiment it records on the end of the extension file recorded at

the end with information DK for middle management about notice information TE of an extension file. Except for the point that processings concerning notice information TE of this extension file differ the duplicate explanation is omitted by this embodiment in the optical disk unit concerning this embodiment by being constituted identically to the optical disk unit 1 mentioned above about a 1st embodiment.

[0140] In this optical disk unit if extension file EF1, EF2 and EF3 are recorded as shown in drawing 12 (A) a microcomputer records notice information TE of an extension file continuously and it will record management information CI and information DK for middle management by the individual information EXF1-EXF3 continuously. The start address of notice information TE which was carried out in this way and recorded is recorded on management table TV.

[0141] In renewal of extension file EF1 which was carried out in this way and recorded EF2 and EF3 and deletion The individual information EXF1-EXF3 is updated and processed by deletion of corresponding individual information EXF1 - EXF3 the very thing or setting out of the invalid flag which shows that the corresponding file was deleted (drawing 12 (B) - (D)). In renewal of these individual information EXF1-EXF3 it performs by overwriting notice information TE and information DK for middle management collectively. If it is in renewal of record of such a actual optical disc 2 the point which is performed on a memory till then and performed like a 1st embodiment at the time of discharge of an optical disc etc. is the same as that of a 1st embodiment.

[0142] On the other hand by the additional recording of an extension file as shown in drawing 13 when newly recording information DK1 for middle management information DK for middle management till then is summarized and management information CI is generated and corresponding notice information TE is generated and these are recorded one by one following an extension file. Record of administrative table TV is broken so that it may correspond to this record. Deletion of all the extension files recorded on the optical disc 2 and updating are processed by renewal of information DK1 for middle management



recorded on this last.

[0143] Even when the recording position of the notice information of an extension file is set up to be a field following the extension file of the last recorded on the optical disc and the notice information of an extension file changes it like this embodiment, the same effect as a 1st embodiment can be acquired.

[0144] (3) In the embodiment of \*\*\*\*\* of the 3rd operation, this invention is applied to the optical disk unit which is an external storage of a personal computer. Various files such as a dynamic image file by format which is different in VTS(s) other than a still picture file, a text file, and a file of map data are applied to the extension file mentioned above. It records on the optical disc 2 like a 1st or 2nd above-mentioned embodiment, and FAIRISE processing of the optical disc 2 is carried out.

[0145] The part of the kind of file which information DK for middle management recorded on the optical disc 2 corresponding to this is a combination formed of management information CI and the corresponding individual information EXF, and notice information TE. Following the temporary information management table (TMP EXT1 MAT), it is made as [ provide / two or more category information search pointer tables (CAT INFO SRPT) ] so that it may correspond to these each combination.

[0146] Like this embodiment, even if it applies files other than a still picture to an extension file, the same effect as 1st and 2nd embodiments can be acquired.

[0147] (4) Although the case where the notice information of an extension file was used as temporary information to a FAIRISE was described, it may be made to use this invention in other embodiments in addition to above-mentioned embodiments, not only this but after a FAIRISE.

[0148] Although the case where a series of processings were performed with the processing program installed in the optical disk unit a priori in an above-mentioned embodiment was described, when this invention performs this kind of procedure by installation of the program downloaded via network, such as not only this but the Internet, when performing this kind of procedure by installation of

the program provided by further various kinds of recording media it can apply widely. As such a recording medium recording media such as a magnetic disk and optical disk and magnetic tape are applicable.

[0149] Although the case where this invention was applied to the optical disk unit which is the optical disk unit and the external storage of a computer which have an image pick-up function in an above-mentioned embodiment was described, this invention can be widely applied when performing processing of this kind with the application program of not only this but a computer.

[0150]

[Effect of the Invention] The identification code which enables it to access individual administrative information and shows the kind of extension file corresponding to the notice information of this extension file via the notice information of an extension file according to this invention as mentioned above. By assigning the recording form information on administrative information, sufficient extendibility can be collateralized and it can record also about files such as still pictures other than an animation.

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## DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is a chart with which explanation of the administrative information in the optical disk unit concerning a 1st embodiment of this invention is presented.

[Drawing 2] It is a block diagram showing the optical disk unit concerning a 1st embodiment of this invention.

[Drawing 3] It is a flow chart with which explanation of the procedure in the optical disk unit of drawing 2 is presented.

[Drawing 4] It is a chart with which explanation of record of the extension file in the optical disk unit of drawing 2 is presented.

[Drawing 5] It is a chart with which explanation of processing of the administrative

information in the optical disk unit concerning a 1st embodiment of this invention is presented.

[Drawing 6] It is a chart with which explanation of processing of the administrative information at the time of the additional recording of an extension file is presented.

[Drawing 7] It is a flow chart which shows the recording processing procedure in the procedure of drawing 3.

[Drawing 8] It is a flow chart which shows the regeneration procedure in the procedure of drawing 3.

[Drawing 9] It is a chart showing notice information.

[Drawing 10] It is a chart showing management information.

[Drawing 11] It is a chart showing individual information.

[Drawing 12] It is a chart with which explanation of processing of the administrative information in the optical disk unit concerning a 2nd embodiment of this invention is presented.

[Drawing 13] It is a chart with which explanation of processing of the administrative information at the time of the additional recording of an extension file is presented.

[Drawing 14] It is a chart with which explanation of DVD format video is presented.

[Drawing 15] It is a chart with which explanation of record by a ROW method is presented.

[Description of Notations]

1 [ .... Compression / elongation processing part ] .... An optical disk unit  
2 .... An optical disc  
4 .... A microcomputer  
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